Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CANDIDATE NAME									
CENTRE NUMBER						CANDIDATE NUMBER				

1049547526

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/22**

Paper 2 (Extended) **May/June 2015**

45 minutes

Candidates answer on the Question Paper.

Additional Materials: Geometrical Instruments

READ THESE INSTRUCTIONS FIRST

Write your Centre number, candidate number and name on all the work you hand in.
Write in dark blue or black pen.
Do not use staples, paper clips, glue or correction fluid.
You may use an HB pencil for any diagrams or graphs.
DO **NOT** WRITE IN ANY BARCODES.

Answer **all** the questions.
CALCULATORS MUST NOT BE USED IN THIS PAPER.
All answers should be given in their simplest form.
You must show all the relevant working to gain full marks and you will be given marks for correct methods even if your answer is incorrect.
The number of marks is given in brackets [ ] at the end of each question or part question.
The total number of marks for this paper is 40.

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Formula List

For the equation $ax^2 + bx + c = 0$ $\quad x = \dfrac{-b \pm \sqrt{b^2 - 4ac}}{2a}$

Curved surface area, A, of cylinder of radius r, height h. $\quad A = 2\pi rh$

Curved surface area, A, of cone of radius r, sloping edge l. $\quad A = \pi rl$

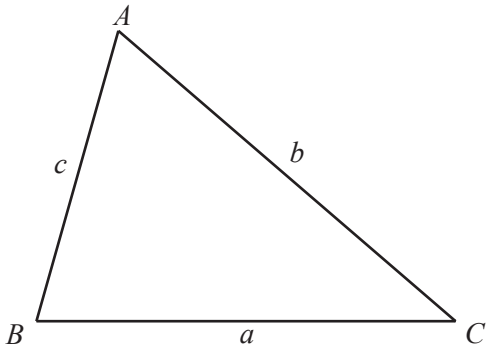
Curved surface area, A, of sphere of radius r. $\quad A = 4\pi r^2$

Volume, V, of pyramid, base area A, height h. $\quad V = \frac{1}{3}Ah$

Volume, V, of cylinder of radius r, height h. $\quad V = \pi r^2 h$

Volume, V, of cone of radius r, height h. $\quad V = \frac{1}{3}\pi r^2 h$

Volume, V, of sphere of radius r. $\quad V = \frac{4}{3}\pi r^3$



$$\frac{a}{\sin A} = \frac{b}{\sin B} = \frac{c}{\sin C}$$

$$a^2 = b^2 + c^2 - 2bc\cos A$$

$$\text{Area} = \frac{1}{2}bc\sin A$$

Answer **all** the questions.

1 **(a)** Work out $(0.3)^2$.

Answer(a) ..... [1]

(b) Find n when $\frac{5}{6} = \frac{n}{24}$.

Answer(b) $n =$ ..... [1]

---

2 **(a)** Find the value of

(i) 25^0,

Answer(a)(i) ..... [1]

(ii) $100^{\frac{3}{2}}$.

Answer(a)(ii) ..... [1]

(b) Write as a single power of 5.

$$\frac{5^{12}}{5^3 \times 5^2}$$

Answer(b) ..... [1]

---

3 Find the magnitude of $\begin{pmatrix} -6 \\ 4 \end{pmatrix}$.

Write your answer in surd form as simply as possible.

Answer ..... [3]

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4 Anneke, Babar, Céline, and Dieter each throw the same **biased** die.
They want to find the probability of throwing a six with this die.
They each throw the die a different number of times.

These are their results.

	Anneke	Babar	Céline	Dieter
Number of throws	200	40	100	500
Number of sixes	46	12	15	100

(a) Complete the table below to show the relative frequencies of their results.
Write your answers as decimals.

	Anneke	Babar	Céline	Dieter
Relative frequency of throwing a six				

[2]

(b) Whose result gives the best estimate of the probability of throwing a six with the biased die?
Give a reason for your answer.

Answer(b) ..... because .....

..... [1]

(c) The probability of throwing a six with a different biased die is 0.41.
Find the expected number of sixes when this die is thrown 600 times.

Answer(c) ..... [1]

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5 A is the point (2, 8) and B is the point (6, 0).

(a) Find the co-ordinates of the midpoint of AB.

Answer(a) (..... , ...) [1]

(b) Find the gradient of AB.

Answer(b) ..... [2]

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6 Simplify $(5+\sqrt{3})^2$.

Answer ..... [2]

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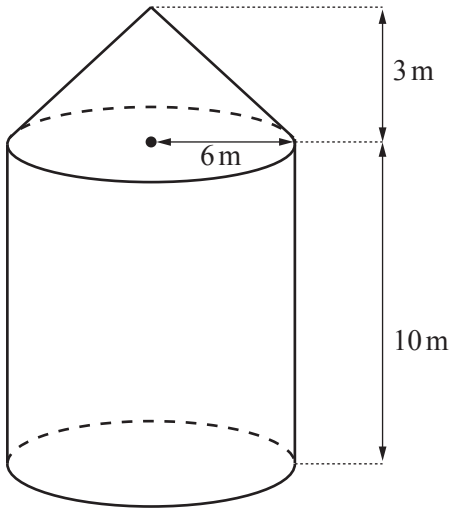
7 Solve.

$$2x+3 \leqslant 4(x-2)$$

Answer ..... [3]

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8



NOT TO SCALE

The diagram shows a shape made from a cylinder and a cone.
The cylinder and cone have a common radius of 6 m.
The height of the cylinder is 10 m and the height of the cone is 3 m.

Calculate the total volume of the shape.
Leave your answer as a multiple of π.

Answer ..... m^3 [3]

---

9 Solve these simultaneous equations.

$$5x + 2y = 11$$
$$4x - 3y = 18$$

Answer $x =$ .....

$y =$ ..... [4]

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10 Solve the following equations.

(a) $\log x + \log 3 = \log 12$

Answer(a) $x =$ ..... [1]

(b) $\log x = 3$

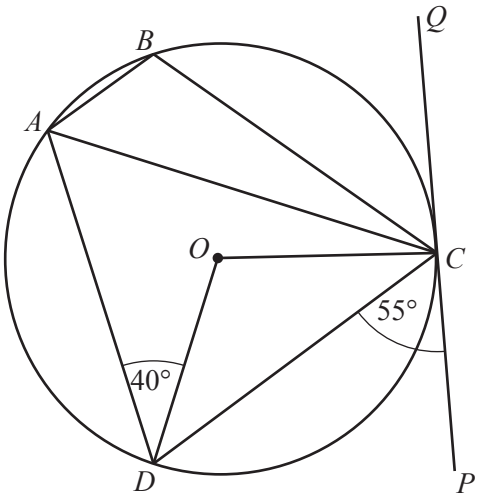
Answer(b) $x =$ ..... [1]

(c) $2\log x - \log 5 = \log 20$

Answer(c) $x =$ ..... [3]

---

11 A, B, C and D are points on the circle, centre O.
PQ is a tangent to the circle at the point C.
Angle $PCD = 55°$ and angle $ADO = 40°$.



NOT TO SCALE

Find

(a) angle COD,

Answer(a) ..... [2]

(b) angle DAC,

Answer(b) ..... [1]

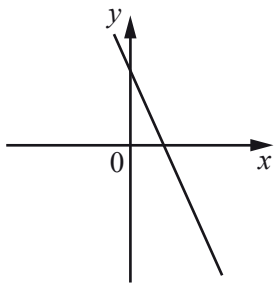
(c) angle ABC.

Answer(c) ..... [1]

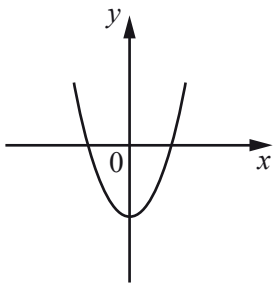
Question 12 is printed on the next page.

12 These are sketches of the graphs of six functions.

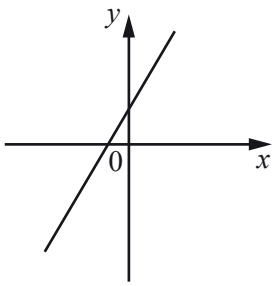
A



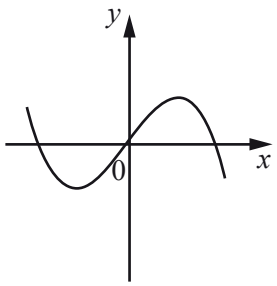
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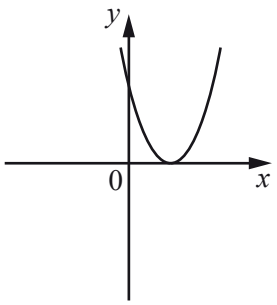
C



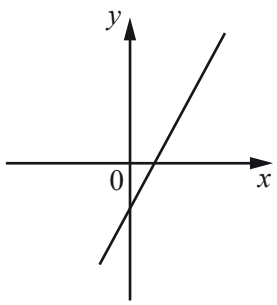
D



E



F



In the table below are four functions.
Write the correct letter in the table to match each function with its graph.

Function	Graph
$f(x) = 2x - 3$	
$f(x) = (x-2)^2$	
$f(x) = 4x - x^3$	
$f(x) = 5 - 2x$	

[4]

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